

Task Order No. 832
USAID Contract No. PCE-I-00-96-00002-00

**Egyptian Environmental Policy Program
Program Support Unit**

Tranche 2, Objective 3

***The Use of Economic Instruments in Packaging
and Packaging Waste: The Eco-Packaging
Approach***

Dr. Abada Kafafi

September 2002

PSU-70

for
**U.S. Agency for International Development
Cairo**

by
**Environmental Policy & Institutional Strengthening
Indefinite Quantity Contract (EPIQ)**

A USAID-funded project consortium led by International Resources Group, Ltd.

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Fact Sheet

USAID Contract No.:	PCE-I-00-96-00002-00 Task Order No. 832
Contract Purpose:	Provide core management and analytical technical services to the Egyptian Environmental Policy Program (EEPP) through a Program Support Unit (PSU)
USAID/Egypt's Cognizant Technical Officer:	Holly Ferrette
Contractor Name:	International Resources Group, Ltd.
Primary Beneficiary:	Egyptian Environmental Affairs Agency (EEAA)
EEAA Counterpart:	Eng. Dahlia Lotayef
Work Assignment Author:	Dr. Abada Kafafi
Work Assignment Supervisor:	Dr. Jan Laarman
Work Assignment Period:	September 2002

Preface

Through competitive bidding, the U.S. Agency for International Development (USAID) awarded a multi-year contract to a team managed by International Resources Group, Ltd. (IRG) to support the development and implementation of environmentally sound strategic planning, and strengthening of environmental policies and institutions, in countries where USAID is active. Under this contract, termed the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ), IRG is assisting USAID/Egypt with implementing a large part of the Egyptian Environmental Policy Program (EEPP).

This program was agreed-to following negotiations between the Government of the United States, acting through USAID, and the Arab Republic of Egypt, acting through the Egyptian Environmental Affairs Agency (EEAA) of the Ministry of State for Environmental Affairs, the Ministry of Petroleum's Organization for Energy Planning, and the Ministry of Tourism's Tourism Development Authority. These negotiations culminated with the signing of a Memorandum of Understanding in 1999, whereby the Government of Egypt would seek to implement a set of environmental policy measures, using technical support and other assistance provided by USAID. The Egyptian Environmental Policy Program is a multi-year activity to support policy, institutional, and regulatory reforms in the environmental sector, focusing on economic and institutional constraints, cleaner and more efficient energy use, reduced air pollution, improved solid waste management, and natural resources managed for environmental sustainability.

USAID has engaged the EPIQ contractor to provide Program Support Unit (PSU) services to EEPP. The PSU has key responsibilities of providing overall coordination of EEPP technical assistance, limited crosscutting expertise and technical assistance to the three Egyptian agencies, and most of the technical assistance that EEAA may seek when achieving its policy measures.

The EPIQ team includes the following organizations:

- Prime Contractor: International Resources Group
- Partner Organization:
 - Winrock International
- Core Group:
 - Management Systems International, Inc.
 - PADCO
 - Development Alternatives, Inc.
- Collaborating Organizations:
 - The Tellus Institute
 - KBN Engineering & Applied Sciences, Inc.
 - Keller-Bliesner Engineering
 - Conservation International
 - Resource Management International, Inc.
 - World Resources Institute's Center For International Development Management
 - The Urban Institute
 - The CNA Corporation.

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Introduction

The solid waste problems in Egypt are significant and possible solutions are challenging. The PSU-supported effort to encourage the use of economic instruments in environmental policy-making is gaining momentum as lack of environmental laws and regulations' enforcement over the last few years have delayed the proper confrontation of the mounting and accumulative problem.

Interest in addressing the solid waste management issues was recently strengthened by a serious drive towards embedding environmental aspects in issues of Trade and investment.

The following report will show how the issues are interrelated with simultaneous impacts on the well being of the Egyptian population and the overall economic growth prospects.

This discussion report is prepared following the set "Consultation Strategy"¹ for the Economic Instruments' activity conducted by the Economic & Finance Unit of the PSU.

The Solid Waste Management Challenge in Egypt

An agreeable classification of solid waste Sources and Types according to a World Bank paper produced in May 1999 is:

- Residential (Food wastes, paper, plastics, textiles, leather, glass, metal, and other non-frequent items such as batteries, tires, durable goods, etc) .
- Industrial (industrial process waste, scrap, off-specs, slag, packaging, and other special hazardous wastes).
- Institutional and Commercial (hospitals/hazardous and infectious, plastics, packaging, metal, paper, etc).
- Construction and Demolition (gravel, wood, concrete, steel, etc).
- Municipal Services (street sweepings, recreational areas, landscape trimmings).
- We may add Agricultural wastes (residues) such as rice hulls, straw, cotton stalks, sugar cane (bagass), etc.

The solid waste problem in Egypt persisted for many years due to well-known reasons and circumstances including public / governorate control with poor budget allocations, depreciation of waste handling equipment, poor management, non-existence of appropriate landfills, serious lack of public awareness due to rapid population growth and urbanization, lack of integrated waste management expertise, and reliance on old traditional waste handling systems.

The problem is compounded by increased industrial, commercial, and residential development activities, and increased flow of new inhabitants moving from rural areas seeking job opportunities and better living standards and services.

The increased urbanization over the past few years did not only exacerbate the waste problem but, to a more noticeable extent, imposed 'cultural' and behavioral shift that are drastically different from what are being practiced for decades in major cities.

¹ The Economic Instruments Consultation Strategy, July 2002

As a result, what should have been a waste ‘management’ challenge became a visible, hazardous, and chronic waste “problem”.

The EEAA, in the ‘National Strategy for Solid Waste Management’ report, estimated the amounts of municipal waste generated daily in major governorates to be: Cairo 8000 t/d, Giza 6500 t/d, and Alexandria 4500t/d.

The current waste handling capacity in all governorates are seriously inadequate (60% of generated waste is being collected and the remaining 40% is left in collection bins, street sides, vacant lots, rooftops, etc)

The municipal solid waste problem is not exclusive to metropolitan areas but also persist in the majority of rural areas and a few additional reasons occur:

1. Cultural backgrounds.
2. Standard of living / income distribution.
3. A mix of municipal and agricultural waste streams.
4. Lack of other essential services complementary to proper waste management (sanitary, water).and infrastructure.
5. Public services prioritization (other services are highly prioritized such as health, education, food supply, etc).

The Privatization Era

Over the past few years, the government of Egypt (Governorates) received substantial support from various international donors to assist a few governorates in handling their municipal solid waste. Some assistance projects were implemented, to name a few;

- The US AID funded 500 t/d Co-Composting facility in Port Said to treat municipal and sewage wastes and produce quality compost for agricultural applications.
- Dutch aid in Fayoum governorate for integrated solid waste management.
- The SEAM project.
- Danida
- Finland’s landfill siting project.

In addition, waste handling equipment and collection trucks were either donated or financed mainly through USAID and other donors.

Faced with serious resource constraints, institutional deficiencies, and lack of experienced specialists in solid waste management, the government of Egypt, represented by local governorates, are turning to the formal private sector’s participation in the delivery of municipal waste services. The mandate of one of the US Aid contractors is actually assisting a few governorates in preparing the necessary bid documents for soliciting competitive offers for municipal waste management. The Alexandria governorate was the first to call for bids and services were contracted with a international waste management company. It is expected that other governorates will follow within a few months.

It is expected of a private operator to provide services covering all elements of an integrated management system that include collection, transportation, disposal, recycling, and possibly resource recovery (e.g. waste-to-energy projects). The operator is also expected to manage

existing ‘public’ facilities engaged in municipal waste handling, i.e. landfills, composting facilities, transport stations, in addition to establishing treatment and secured disposal sites for hazardous waste (mostly medical waste).

Fees for services will be applied and collected by the governorate through a new arrangement where service charges are added to the monthly electricity bill.

Privatization and the Use of Economic Instruments

The definitions of what economic instruments are emphasize their role in affecting tangible “Behavioral Change” in addition to their fiscal incentives or disincentives.

Private waste management operators are profit-oriented businesses; they render services and generate revenues and profits. The participation of a private operator in affecting a significant behavioral change is not mandated, or highly expected, of a contractor although their involvement would have a definite impact on the way the current system is operating and would render, on the longer run, a favorable and more disciplined waste handling ‘culture’.

Therefore, waste companies will manage the ‘generated waste’ but will not actively engage in activities supportive of developing improved waste handling concepts such as source reduction, minimization; public awareness; and reuse/recycle. Here, Economic Instruments may play a role.

Economic instruments when carefully selected, designed, and implemented will contribute to the desired behavioral shift and eventually lead to better practice, waste reduction, and effective public participation in the overall well-being of the national waste management system.

It is important to recognize the value of introducing viable and effective EIs to work hand in hand with the evolving private waste management business. The international experience of using economic instruments would assert this concept. Actually all developed countries are using successful combinations of EIs, CAC measures, and private waste services.

Municipal Waste Composition

Various waste analyses conducted over the last few years demonstrated the potential adverse effects of plastic wastes and their impacts on environmental quality of air, water, and soil.

According to several studies, and estimates documented in the “National Strategy” for solid waste, the municipal solid waste composition is illustrated in the following:

Organic	41–60 %
Paper	5–15%
Glass	3%
Plastics	6%
Metal	3%
Others	13–41%

Composition variations will depend to a great extent on seasonal cycles, income distribution, commodity prices, manufacturing activities, governorate location, population densities, and consumers habits.

The most reported variation is the plastic content, which could actually reach a 15% level observing the mentioned variation factors.

An “Informal” recycling community exist in Egypt where “Recyclables” are collected and processed to produce a variety of by-products geared for low-income consumption and as feedstock to some industries that may accommodate a recycling content as raw materials (such as the Container Glass industry where a portion of the raw material ‘mix’ could have a crushed glass content).

The most recyclables are glass bottles and containers, metal scrap and containers, and paper. This leaves a major ingredient in the waste stream unattended, and that is plastic wastes.

It is true that some forms of plastic waste, particularly ‘rigid’ plastics would find small scale, unsophisticated, recycling operations handling a portion and converting to feedstock of low quality plastic by-products however, the “Soft” plastic packaging has been recognized as a major and growing environmental problem.

The “Packaging” Content of Solid Waste

Packaging is a vital sector of most national economies. It helps preserve resources by preventing spoilage and products’ waste until they reach their intended function. The main packaging materials are;

- Glass
- Metal (Aluminum, steel)
- Paper and board
- Wood
- Plastics

Packaging is classified into “Degradable” and “Non-degradable” and the lifetime of the material it takes to degrade varies considerably and reaches several hundred years for plastics with serious adverse effects on soil, air, and water resources.

Observing the solid waste composition mentioned earlier, it is noted that the ‘packaging content’ of the solid waste stream actually reach about one-third of the total volume.

Packaging wastes appearing in the municipal waste stream are not the only estimate. Industrial wastes also contain considerable amounts of packaging waste and their disposal may take another route.

Glass, paper, and wood are considered degradable materials and do not share the same adverse effects as plastics. Glass, for example, is collected by waste collectors, sorted (colored and clear), and sold to container glass manufacturers. Broken Glass (Cullet) is then used as feed material in a “smelting batch”. This recycling mode is being practiced in Egypt for a long time. Collectors get a fair price for the waste and always in demand as it represents savings to manufacturers in raw material cost and energy consumption (glass cullet takes less energy to melt and enhances the glass batch consistency).

Waste paper and board have a market and they do not represent a significant problem to waste treatment operations (composting).

It is plastic waste that is considered the most problematic in its collection, treatment and disposal.

Plastic waste variety, consumer use patterns, and culture, do not allow for proper establishment of collection, reuse and recycling operations in Egypt.

Some types of plastics are collected and recycled, but operations are small and fragmented. The

“Zaballeen” area in Mokattam is one example of small recycling community, successful in its own merits but would not be able to handle the overgrowing problems of plastic waste and is limited to specific types, usually the rigid waste variety.

Other types of plastic packaging waste, particularly bags, are the most significant obstacles facing the operators of the nationally-established composting facilities’ network.

The government has committed over LE250 Million to establish 50 Composting facilities in all Governorates to treat the municipal solid waste and produce quality ‘Compost’. Most of these facilities are inoperative, or operating way below design capacity, due to the inefficiencies of waste collection and the high content of the non-compostable plastics in the waste stream.

Is Plastic Recycling a Commercially Viable Business?

For some types of plastics, recycling operations could be commercially viable businesses. Recycling operations rely mainly on the efficiency of the collection system to guarantee a stable flow of feedstock. One example of a potentially viable recycling business is the PET used for water bottles and some other beverage containers. Because of their use, they are readily identified by consumers and thus easier to collect than other plastics.

In the United States, PET is currently the most extensively recycled plastic packaging material and there are well-developed markets for its recycled products such as carpet fibers and fiberfill.

A special chemical process (hydrolysis) converts PET back to its original components and can be used in food-packaging applications. The FDA has approved the use of recovered PET polymer using this chemical process in food and beverage packaging (*International Trade Forum Publication, August 2001*).

A mandatory deposit-refund system could create the necessary collection system and guarantee the stable flow of waste required to commercially operate a recycling operation to produce valuable products. This instrument is proposed for further investigations.

Plastic Packaging Products and Waste

Averaging the plastic waste content of the municipal waste generated daily in the greater Cairo governorate alone would yield some 500-1000 tons of plastic, non-degradable, waste variety that are left untreated, and not properly recycled or landfilled.

There were numerous attempts over the past few years to find solutions to the growing problem of plastic waste but failed to reach the roots of the problem and focused on 'cosmetic' measures which compounded the negative impacts and prompted the recent and serious public concern.

The 'National strategy of Municipal Solid Waste' stated the importance of addressing the ever-growing problem of plastic packaging wastes and highlighted its priority. It also stressed the necessity of waste reduction, recycling and resource recovery.

As the PSU efforts in developing Economic Instruments are better designed and implemented in accordance with the overall national policy of each sector targeted to ensure their effectiveness and political acceptability, this discussion paper will investigate the possible use of EIs to assist in confronting the increasing Plastic Packaging waste problems in Egypt. The magnitude of the plastic wastes' problem, their environmental and health effects, and proposition of illustrative EIs, are demonstrated.

Classification of Plastics, a Technical Background

There are almost 50 different kinds of plastics used in the production of everyday items that we use and eventually disposed off. Of these fifty, six are used extensively enough to be classified as main plastics with the remaining grouped into a seventh category.

1. PET (Poly Ethylene Terephthalate)
2. HDPE (High Density Polyethylene)
3. PVC or V (Vinyl polyvinyl chloride)

4. LDPE (Low Density Polyethylene)
5. PP (Poly propylene)
6. PS (Polystyrene)
7. All other plastics and multi resin plastics

PET

Accounts of 20 - 30% of the bottle market and is the most commonly recycled plastic. PET formed in a variety of foodstuff package and is used mainly for its clarity, toughness, and ability to resist permeation by carbon dioxide.

HDPE

Accounts for 50 - 60% of the bottle market. HDPE is used to make milk jugs, butter tubs, detergent bottles, motor oil containers and bleach bottle to name a few.

PVC

Accounts for 5 - 10% of all plastic packaging. It is used to make bottles (water, shampoo, cooking oil), garden hoses, flooring, credit cards, shower curtains, and many more related items. A main problem with PVC is that when it is incinerated it contributes to the production of HCl and other serious toxins.

LDPE

Accounts for 5 - 10% of all plastic produced. Its uses include shrink-wrap packaging, plastic sandwich bag, and clothing wrap.

PP

Accounts for 5 - 10% of all plastic produced. It is used to make plastic bottle caps, plastic lids, drinking straws, broom fibers, rope, twine, yogurt containers and carpets.

PS

Accounts of 5 - 10% of all plastic produced. It is used to make Styrofoam cups, egg cartons, and fast food packing

Others

Account for 5 - 10% of all plastic produced. There are frequently found as composite plastics. These plastics are high performance plastics.

Egypt is considered a large producer, importer, and manufacturer of packaging raw materials and products. The plastics industry in Egypt is growing steadily and becoming increasingly modernized. In 1999, Egypt consumed plastic materials and resins worth nearly \$1.5 billion. Demand is expected to grow at 10% annually for the next three years. 83% of Egypt's plastics market is supplied by imports and 17% from domestic sources. A 5% duty is levied on imports.

Table 1 shows the annual market size of resins and plastic raw materials.

Table 1 Annual Market Size for Resins and Plastic Raw Materials

	1998	1999	2000
	Thousand Tons		

A. Total Market Size	1265	1518	1670
B. Total Local Production	253	304	334
C. Total Exports	0	0	0
D. Total Imports	1072	1286	1415

(US AID Commercial Service Country Report 2000)

The use of non-degradable plastic (flexible) packaging material is on the rise due to their cost effectiveness, durability, convenience of use, and handling. The packaging industry is vital to Egyptian production of food items and for exports. Proper packaging reduces food waste and enhances exports' potential.

Examples of Soft- packaged Products

- Bottled Water.
- Soft drinks (carbonated beverages).
- Vegetable oils.
- Dairy products (milk, yogurt tubs, soft cheeses, etc).
- Tetra Packs for dairy and juice products.
- Foodstuff, dry goods (grains, rice, sugar, beans, etc).
- Fresh vegetables, fruits, etc.
- Confectionery and snacks (candies, chocolates, pastries, potato chips, snacks, etc.).
- Cosmetics and healthcare products (shampoos, soaps, lotions, toothpaste, etc).
- Medicine (drugs).
- Plastic bags (grocery and others).
- Infants' disposable diapers.
- Stationery items.
- Fast food boxes.
- Fertilizers, pesticides, and other dry chemicals.
- Motor Oil.

Adverse Effects of Plastic Wastes

Plastics tend to help make our lives a little easier, but at what environmental expense? Plastics contain polyvinyl propylene, phenol, ethylene, polystyrene, and benzene, all of which are considered highly toxic and hazardous air pollutants. Plastic litter is a serious threat to the lives of marine mammals, fish, and birds. Up to 1 million seabirds and 100,000 marine mammals are killed each year by plastic trash such as fishing gear, sandwich bags, Styrofoam cups, food tubs, and floating plastic bags.

Conventional plastics have been associated with reproductive problems in both wildlife and humans. Studies have shown a decline in human sperm count and quality, genital abnormalities and a rise in the incidence of breast cancer. Dioxin, a highly carcinogenic and toxic by-product of the manufacturing process of plastics, is one of the chemicals believed to be passed on through breast milk to the nursing infant. Thus, conventional plastics, right from their manufacture to their disposal are a major problem to the environment.

Plastic-based products are non-degradable materials (it takes 300-500 years to biodegrade) that find their way into the municipal waste stream and would eventually be deposited in landfills or burned, and in both cases come with a high degree of environmental damage.

Some researchers would attribute part of the black smog problem experienced in Egypt the last two years to the burning of municipal waste containing significant amounts of plastic-based material.

The emissions of plastic burning include Cadmium, furans, and dioxins and all are extremely harmful even in small quantities.

It must also be noted that many plastics were once packaging for pesticides, chemical fertilizers, and household cleaners and therefore contain a variety of toxic ingredients. The reuse (recycle), landfilling (if available), or burning of these plastics will cause, in all cases, harmful environmental and health consequences.

Examples and Estimates of Plastic Packaging Wastes in Egypt

Carbonated Beverages and Water Bottling.

Carbonated beverages are supplied in 200ml glass bottles and 1.5 - 2 liters plastic bottles.

Based upon data from the Central Agency for Public Mobilization and Statistics, the annual consumption is currently estimated at **500 million** litres. Cairo has a market share of about 70%

(**350 million litres**). Expected annual consumption growth is **12%**.

(Percentage of plastic bottles share could be estimated).

Some 9-10 water bottlers are now operating in Egypt with an estimated annual consumption of about **200 million** litres. Cairo has about 40% of the total market (80 million litres).

Expected annual consumption growth is **15%**.

Plastic (PET) is the only packaging media used. Bottles 500ml, 1 litre, and 1.5 litres are various sizes used and the 1.5 litres is the predominant size (75%).

There are no recycling facilities for this type of plastic yet in Egypt and the water bottling companies are not responsive to include a recycling operations in their facilities.

Vegetable Oils

Egypt imports bulk vegetable oils (Cottonseed, Sunflower, Corn, Palm, etc.) at a rate of about **800,000.00** MT/Year. The average annual consumption is over **one** million tons and the balance is produced locally. Each ton of vegetable oil requires about 1200 bottles, one-liter capacity.

It is reasonably assumed that at least 800,000 tons are bottled; this translates to **960 million** plastic bottles added to the municipal waste pile.

Dry Goods—Rice, Beans, Sugar, Flour, etc.

Egypt is one of the world largest importers of wheat, flour, sugar, and a variety of beans.

Annual imports of wheat are about **6 million** tons and the estimated annual consumption is about 12-14 million tons. Flour produced is mainly bagged in 1 Kg plastic bags.

Again, assuming that 50% only of flour production is bagged (a conservative figure), this will correspond to about **6 billion** plastic bags going to municipal waste.

Rice, sugar, grains, and beans will most certainly generate similar quantities that run in billions of waste plastic.

Grocery Plastic Bags

An observer of the waste problem would readily notice the plastic bags flying in most areas in Egypt. The increased usage of plastic bags for grocery and most family purchases is alarming. Plastic shopping bags are one of the worst disposal problems encountered in recent years.

Careless disposal of plastic bags chokes drains, blocks the porosity of the soil and causes problems for groundwater recharge.

Plastic disturbs the soil microbe activity, and once ingested, can kill animals. Plastic bags can also contaminate foodstuffs due to leaching of toxic dyes and transfer of pathogens (recycled colored plastics from unknown origins); this rendered a health problem not only upon disposal but also with usage.

The magnitude of this particular usage / waste problem alone would add considerable legitimacy to the use of all measures, EEIS and regulations, to curb its serious effects.

Examples and figures can go on and on, producing astounding figures and evidence of the serious environmental damage and health effects of plastic wastes.

Table 2 Estimated Plastic Waste in Egypt (thousands of tons)

Year / Type	2000	2001	2002	2003	2004	2005
Polyethylene	212.6	435	458.2	482.6	507.9	533.9
Polypropylen	127.4	134.4	141.5	149	156.8	164.9
Polyvinyl	161.1	175	178.8	188.4	198.2	208.4
Polystyrene	106.8	112.6	118.6	125	131.5	138
Engineered Materials	36.1	38	40.2	42	44.6	46.8

Year / Type	2000	2001	2002	2003	2004	2005
Total	844	890	937	987	1039	1092

(GOFI, 1999)

International Experience with Use of Economic Instruments for Packaging Waste

The European Union's issued directive regarding packaging waste 94/62 is a good basis for a brief presentation about the possible use of economic instruments for packaging waste.

The mentioned directive emphasized the growing interest in the use of EIs in environmental policymaking. A specific definition of packaging waste EIs was introduced as:

“A mechanism designed to affect the relative cost of various forms of packaging, packed products or packaging waste management so as to discourage packaging, products and activities deemed to carry higher environmental burdens than certain alternatives”.

Seven different types of economic instruments have been used with respect to packaging and described in the document as follows:

1. **'Eco-taxes'**, levied at a high rate and expressly intended either to discriminate against particular products or, through the possibility of exemptions, to affect industry policy and purchasing choices;
2. **Industry-managed charges** or internalized costs applied to packaging in a non-discriminatory way and intended to reflect actual recovery costs as far as possible. Similar arrangements are now beginning to be applied to other product waste streams, such as end-of-life electrical goods and batteries;
3. **Tradable permits** – used in the UK for the PRN (Producer Responsibility Note) system through which compliance with the Producer Responsibility Obligations (Packaging Waste). Regulations (*ref. 38*) are demonstrated. A similar approach has been under discussion in Germany as an alternative means of controlling the quantity of non-refillable beverage containers on the market;
4. **Mandatory deposits**, introduced either as an incentive to return non-refillable beverage containers (or a price penalty for non-return), as a sanction for non-achievement of targets, or as a recovery mechanism dedicated to particular types of packaging and product;
5. **Industry-managed voluntary deposits**, used as an incentive for the return of refillable beverage containers and in some countries also for the return of all or specific non-refillable beverage containers;
6. Broadly-based, but usually relatively low, **taxes on waste for final disposal** (landfill or incineration without energy recovery);
7. **State aids** – the Community guidelines on state aid for environmental protection (*ref. 7*) Say that "subsidies may be a second- best solution in situations where the Polluter Pays Principle ... is not fully applied however such aid may distort competition, create trade barriers and jeopardize the Single Market." While the general increase or introduction of taxation does not represent State aid which has to be approved by the commission, exemptions from a general tax in the form of reduced tax rates or refunds may be categorized as state aid, if they intend to favor certain under-takings or sectors of industry.

Source Reduction Versus Recycling

As previously described, recycling of plastic waste in Egypt is a challenging business.

The ‘Egyptian Federation of Plastic Manufacturers’ is trying to establish a ‘Holding Company’ for plastic recycling for many years. A regional conglomerate is being negotiated now to include most of the major Arab countries to participate in the plastic recycling business and to encourage waste exchange and reuse.

Efforts to establish ‘legitimate’ and strong recycling operations will take time and significant resources to materialize due to many factors, some are financial and others are ‘logistical’.

It is therefore essential to look into ‘Source Reduction’ as an immediate, and economically viable, direction that reduces the waste volume and minimize its hazardous effects.

Upon reviewing the implemented Economic Instruments, and existing CAC measures, worldwide, it is readily noticeable that the focus is on source reduction rather on encouraging recycling operations. When collection, sorting, and source-separation methods are not a part of the waste handling ‘culture’ then reduction of waste is almost the only effective approach.

Economic Instruments can play a major role in reducing wastes and encouraging the use of environmentally-friendly packaging materials.

Egypt would greatly benefit from waste reduction schemes that suite the existing handling capabilities as well as supporting the CAC measures that are not yet implemented. Therefore,

the design and introduction of economic instruments addressing solid waste problems in Egypt should primarily focus on source reduction and encouraging the shift to degradable materials.

On that basis, the discussion will follow with highlighting the aspects of source reduction as part of the Eco-packaging principles.

The Principles of Eco-Packaging

Eco-packaging is primarily concerned with minimizing the environmental impacts of packaging. An eco-packaging effort is focused on:

- Elimination of unnecessary packaging
- Packaging lightweighting
- Use of degradable or recycled materials
- Produce packages that are recyclable or reusable.
- Conserve Energy
- Conserve non-renewable resources
- Reduce pollution of air, soil, and water

Integration of Eco-Packaging Guidelines in the Packaging Market in Egypt

In addition to the national focus on reducing the generated amounts of solid waste Egypt, and implement a national strategy for proper management, Egypt is embarking on a national drive to support export activities. In both cases, adopting Eco-packaging principles will play a vital role in strengthening both objectives, and particularly enhance export opportunities and ensure fewer burdens that will be faced by exporters in international markets.

Increased awareness of the eco-packaging concept and methodologies became a necessity due to the implementation of international trade agreements as well. Some countries may impose fees on environmentally-harmful imported products, which represents an extra cost Egyptian exporters may have to pay.

One important principle in Eco-packaging schemes is the widely-promoted “**Extended Producers Responsibility**” concept.

EPR is defined as “ the extension of the responsibility of producers for the environmental impacts of their products to the entire product life cycle, and specially for their take-back, recycling, and disposal”. The origins of EPR lie in Germany’s packaging ordinance of 1991, which holds producers responsible for managing packaging waste and precludes the use of public money for this purpose.

EPR has a major impact on the Reduce, Reuse, Recycle (three Rs), and on product and package design. They can be described as market-based approach that internalize actual waste management costs into product prices and can provide an important economic incentive to drive product innovation and more efficient resource use (*EPR article in Pollution Prevention Review, pp.43-55, volume 8, 1998*).

Application of the “Consultation Strategy”

The economic instruments consultation strategy emphasizes a three-tier process where the investigations and analyses of proposed economic instruments follows diversified consultations with stakeholders, the Advisory Group, and experts.

In the process, interviews would be conducted as well as “focused consultation groups’ on each proposed topic and related instrument(s).

Applying the consultation process, the following was achieved:

1. **Interviews and formation of the focused group:** acknowledging the credible direction of involving active NGOs in environmental activities, a contact and follow-up discussions were established with a respectable NGO, the “Egyptian Packaging Development Association”. This NGO, formed in 1973, is a full member of the “World Packaging Association” and has a very impressive membership roster.

A Board of Directors meet regularly to organize the promotion of advanced packaging developments as well as establish sound packaging practices supportive of the following objectives:

- A/Enhance the packaging industry in Egypt
- B/Packaging materials’ research and advancements.

- C/Integration of Environmental aspects in packaging industry (RRR)
- D/Export packaging developments and Trade issues
- E/Organization of International conferences and discussion forums.

The “Focused Group” formed through this NGO consist of senior experts from Ministries of Agriculture, Trade, Planning, Petroleum, and Industry. In addition to private enterprises such as the largest packager in Egypt (FEBCO), Academia (packaging design and publishing, university of Helwan), and the committee has access to a broad base of specializations that draws from whenever the there is a need. The group meets on a weekly basis to discuss variety of issues on developing the packaging activities and including environmental and trade aspects.

2. Through the active representation of the E & F unit in the focused group weekly meetings, channels of communications are now established with the Minister of Environment and the EEAA to mobilize the integration of environmental aspects in packaging systems. As a result, letter of invitation was issued to the minister for participation in the future series of “Forums”, during the month of September, to discuss issues related to the enhancement of competitiveness of national products through development of packaging systems, intellectual property rights, role of specifications’ standardization in integrated packaging systems, environmental dimensions in integrated packaging systems, consumers’ perspective of national products in local and international markets, applying the 3R principles (Reduce, Reuse, Recycle), concepts of Eco-packaging, and technical capabilities to strengthen competitiveness of national products.
3. Environmental ingredients were integrated and emphasized in a forthcoming initiative named “ The Packaging Star” where producers are encouraged to participate in a national competition on creative packaging. Winners will get the opportunity to participate in the international competition organized by the WPO. The main points where a packaging is judged are:
 - Product Marketability
 - Design
 - Overall quality (protectivity)
 - Environmental friendliness, e.g. recyclability, Reuse, degradability, clarity of labeling information with regard to environment (possibility of introducing eco-labeling concepts), energy consumption in producing packaging material, etc
 - Optimum use of raw materials and cost reduction
 - Creativity in structure and construction

Consultation with Private Sector

Another objective of the consultation strategy is the possible engagement of private sector in the debate on the benefits of applying economic instruments in supporting their businesses.

The contact with the “ Egyptian Federation of Plastic Manufacturers” resulted in a wider engagement with a potential “Plastic Recycling” consortium being formed to start in Egypt and expands to other countries of the Middle East.

The consortium, aims at creating a integrated waste recycling business, already proceeding with establishing the business with support of the “ Council of Arab Economic Unity”, a special economic cooperation council under the auspices of the “ League of Arab States”.

A major planned activity is the plastic waste collection and recycling from all Arab markets and starting with a model in Egypt.

This private organization is willing to consider business ideas strengthening their approach and would engage in developing the use of economic instruments that may support their initiative, e.g. a deposit refund system could be one favored approach.

The consortium was encouraged to establish contacts with the Ministry of Environmental Affairs, EEAA, and possibly the EPF.

A project presentation was obtained describing the project's objectives and estimated budget.

Principal consultant of this consortium is willing to participate in future meetings and discussions of the focused group.

Available Market Information

Information on plastics and packaging industry in Egypt is available from various sources, the most reliable are:

- The General Organization for Industrialization, Ministry of Industry, study on packaging waste, 1999
- The Petrochemicals Division, 'Petroleum Research Institute, Ministry of Petroleum
- Specialized Research Division, Export Development Centre, Ministry of Foreign Trade
- Central Agency for Mobilization and Statistics
- Egyptian Federation of Plastic Manufacturers
- Federation of Egyptian Industries
- US Commercial Services
- Major private Consulting Companies

Information gathering from these sources is proceeding and will act as base for further detailed investigations / analyses on the proposed instruments.

Local Manufacturers of Environmental equipment:

- The National Authority for Military Production
- The Arab Organization for Industrialization

The encouragement of local manufacturing of recycling equipment, solid waste collection, and treatment systems would further strengthen the interest of the private sector investments in establishing commercial operations, possibly benefiting of the recently achieved privatization contracts in most Governorates.

Proposed Instruments for further Consultation:

- Mandatory Deposit-refund system for PET beverage containers (water and carbonated drinks)
- Tax incentives for production and use of recycled plastics
- Incentives for use of degradable (environmentally-friendly) packaging materials, e.g. glass and paper products.
- Product charges (the German packaging ordinance has a packaging tax that differs for different materials and is used to fund waste management systems).
- Voluntary participation of private entities in applying packaging reduction initiatives, e.g. the initiative on plastic bags' replacement in major supermarkets .

Expected Results of Properly Implemented Consultation Strategy

- Identification of information sources and building reliable market information database and relevant studies.
- Establish proper presentation documents to Advisory Group, stakeholders, and experts.
- Preparing for future detailed analyses on proposed instruments, i.e. institutional, legal, economic, administrative, social, and political.
- Providing the EEAA/Board of Directors with sufficient decision-making background to adopt instruments within its purview and seek endorsement for instruments outside its purview.
- Mobilization of advocacy groups, public awareness, and capacity building initiatives necessary for introduction and implementation of viable instruments.
- Enhanced Voluntary participation in waste reduction programs.
- Highlights the integration of environmental measures in trade, export, and competitiveness aspects strengthening the national drive for export and free trade.
- Mobilizing private sector participation in waste disposal and recycling operations.
- Encourage the involvement of NGOs in environmental policy decision-making.
- Establish communication channels, dialogue, and collaboration between various stakeholders to lobby for adoption and support of proposed instruments
- Proper 'documentation' of the effort, through specific and unified 'scope' for all instruments. The 'comprehensive information packages' produced for all proposed instruments will be the main deliverable in the final report that will be submitted to the EEAA Board for adoption.

Follow-Up Steps Beyond the Consultation Process

The consultation process is a focused effort and a necessary prelude to the following phase of in-depth investigations and analyses. This consultation phase, and the produced reports, will serve as information and advisory bases for the necessary legal, institutional, economic, and political / social analyses.

It is expected that the follow-up phase to start October and by then, STTA consultants would proceed with their work. The consultation reports and the follow-up work will be drafted in a unified format for all instruments investigated.

The detailed analyses, roundtable discussions as described in the revised Workplan, further consultation with relevant stakeholders, and preparations of the comprehensive final report for the EEAA / BOD, should have an implementation period October 02 – June 03. Revision of all existing reports prepared earlier by local and international consultants will also be conducted during the same period to determine their usefulness for inclusion in the final report.

The economic instruments effort focuses on achieving quality deliverables necessary for realizing the predetermined Means of Verification. Precise assessment of the set MoV necessitated significant revision of the Workplan and intended deliverables.